



BUILDING A GROWTH MOVEMENT:
A Review of Community-Based Growth Monitoring in Indonesia

Lukas Hendrata*
Marcia Griffiths
Ellen Piwoz

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Executive Summary

The Indonesia Family Nutrition Improvement Program (UPGK) has received increasing attention in recent years as a potential model for the implementation of a focused approach to child survival and development. Expanded in 1979, the program is presently implemented in 40,000 villages throughout the country. The factors contributing toward the program's widespread popularity are varied. This report critically reviews the processes that shaped the program's development, and examines the strategies employed in its implementation, expansion and refinement.

Essentially, UPGK is a communication and education program revolving around the monthly weighings of children under five by trained community volunteers and with the active participation of mothers in the community. Health workers or family planning field workers provide the supervision. The central message of the program is "A Healthy Child Gains Weight Every Month." Through the monthly weighing activities mothers are directly involved in monitoring their children's growth and are encouraged that their children, too, can gain weight every month. The individual nutrition education messages were designed to correspond to the growth patterns of young children, and the community volunteers deliver individual messages to mothers according to a child's age and growth in that particular month. This strategy has transformed nutrition from a vague and abstract concept into a very simple, concrete and action-oriented one.

The concept that growth indicates health in children is introduced at the community level as well as in the various levels of government administration. A healthy community is a community where all children gain weight every month. This is perceived as an attractive and achievable goal and has been a very effective rallying point for mobilizing community resources and participation.

To realistically assess of whether the program can be transferred into a different environment, one needs to clearly understand the various factors that have contributed toward the development of the program strategy and toward the widespread expansion of the program in a relatively short time. The most important factors include:

- o Indonesia's pioneering work in the field of nutrition, begun in the early 1950's, has contributed toward the understanding of the nature of the nutrition problem in the country and has created awareness among policy makers of the role of nutrition in development.

- o The relatively well developed infrastructure of the health, family planning program and government administration in general has facilitated program formulation, implementation, and rapid expansion.

o The use of an established network -- the community-based family planning program -- has generated active community participation, in terms of the donation of time and resources, for program implementation.

o The availability of a small group of technical people representing various agencies (Ministry of Health, Family Planning Agency, universities and private voluntary organizations) who believe in the strategy and are willing to invest considerable effort to develop and test the concept and implementation strategy of the program has facilitated the acceptance of the program by the planners and policy makers.

o The simplified technology and program concept has made popular participation possible.

o The management strategy created political momentum through sweeping expansion ("expansion by explosion") rather than the conventional incremental development, and used this momentum to great advantage. The refinement of the program's design and performance is done after significant coverage is reached.

The most significant impact of the program so far is in the awareness and political commitment nationwide to nutrition at community and other administrative levels. It is true that there has always been a concern for nutrition in the community, but the growth monitoring program has made it possible to translate that concern into concrete, affordable program action on a national scale.

The program has also created a strategic focal point for the integration of other components of primary health care. Growth monitoring is the only activity within primary health care that is both community-based and recurrent, thus providing the ideal setting for effective and continuous interaction between the program and the community. In the Indonesian experience the massive spread of the program at the community level has generated a tremendous 'pull' on the health system to move toward the periphery. This will certainly shape the future development of the national primary health care program.

The evaluations of the UPGK program to date have been primarily concerned with managerial and technical issues. The insight acquired through these evaluations is expected to guide further refinement of the program. Some of the important findings are as follows:

o The actual coverage of children in the program villages is relatively low (40 - 50%).

o The training and supervision of community volunteers need to be strengthened to improve their performance as nutrition communication and education workers.

o The guidelines for referral to medical and nutrition rehabilitation services need clarification.

o The mechanism for intersectoral coordination needs to be further defined and strengthened.

With regard to the program's direct impact on nutritional status, there has been very little information available. The general impression is that there is practically no difference in the prevalence of mal-nutrition between program and non-program areas, though an evaluation of one pilot project found improvements in nutritional status that were attributable to program participation. More carefully designed studies will have to be conducted on this issue to determine the actual impact and to provide more in-depth analysis of the problem.

The results of the UPGK cost analysis indicate that from 1979 to 1982 the intended cost per child per year was \$4-5 for the basic package (without rehabilitative supplementary feeding and agricultural input), and \$9-12 for the complete package (with rehabilitative supplementary feeding and agricultural input). About 60-65% of this cost is absorbed by the delivery cost (wages, travel, administrative and other overhead costs of intermediate and central bureaucracy). Improvement of the UPGK program coverage would therefore be an important way to increase program efficiency. The delivery of additional primary health care services through the same system will increase the efficiency of the system and thus will be a rational option for the next stage of program development.

The Indonesian experience in the implementation of a large-scale community-based growth monitoring program has demonstrated that, from the strategic point of view, rapid expansion before managerial and technical finetuning is a justifiable option. Now that the first step of program development (i.e., the massive coverage) has been achieved, it is critical to look carefully into problematic managerial and technical issues and to improve the performance of the program. Failing to do so will endanger the credibility of the program, and this, in turn, will erode the political support presently enjoyed by the program.

INTRODUCTION

The Indonesia Family Nutrition Improvement Program (UPGK), with its growth monitoring and nutrition education components, has received increasing attention in recent years and has become a model for UNICEF and national governments of how to implement a focused approach to child survival and development. This has occurred for several reasons. Initiated before the 1978 declaration of "Health for All by the Year 2000" and the promotion of primary health care, UPGK has shown that growth monitoring is a useful activity that can benefit all other community health programs. The understanding of the importance of child growth to all health programs created widescale government support and professional commitment for UPGK. This enabled it to expand rapidly, and through its integration with other program networks, UPGK assumed great visibility in a relatively short time. The program's main message of weight gain in all children each month is well understood and has become popular among community leaders and family members.

The success of the Indonesian program within the country and its reputation internationally, however, have not been due solely to professional, national and international support. From the beginning, the program's goals and objectives were clearly stated, innovative and conceptually sound. Furthermore, the program was built on results obtained from an evaluation of the previous national nutrition program. This evaluation revealed, among other things, that undernutrition was found in homes where food supplies were considered to be adequate as well as in

those homes where it was considered inadequate (Sajogyo, 1974). The UPGK program, therefore, chose not to focus on correcting deficiencies in food availability per se. It elected as its priority the prevention of undernutrition through the monitoring of growth, with an emphasis on continuous weight gain rather than attained nutritional status as measured by international standards. This was complemented with a program of nutrition education that was oriented toward behavior change as opposed to the imparting of nutrition knowledge alone. Mothers and other community members were active participants in both of these activities.

Much has been written about the UPGK and the implementation of its various components. A bibliography of published and unpublished material on this subject is included at the end of the report. The purpose of this paper is not to repeat what has already been said, but to critically analyze some aspects of program design, decision-making and implementation, which until this time have not been widely discussed. Included will be a discussion of the concepts underlying the decision to center the program around community-based growth monitoring and information exchange. There will also be an examination of the consequences (positive and negative) of its rapid expansion, the use of volunteers, shortcomings in their training and supervision, and a discussion of the program's limited coverage (40%) in the populations it serves. This critical analysis will allow abstracting of lessons that, in turn, will facilitate the development of similar programs in other parts of the world.

Underlying this discussion is the recognition that the Indonesian program may not be easily replicated. It is believed, however, that an open and critical analysis of the process that directed the program's

development is necessary in order to identify the essential ingredients for reproducing its efforts. Once these have been identified, and, where necessary, strengthened, the recognition ("popularization") of the importance of growth to personal, social and economic development will spread more rapidly and effectively nationally and globally, as well as within communities and homes.

The report is divided into five sections. The first section briefly describes the country's demographic, health and nutrition characteristics. The second section presents the process of program development and its four basic stages of evolution. This is followed by an examination of the strategies employed in program communications, training, implementation and monitoring in section III. That section also includes a discussion of how community-based growth monitoring has served as an entry point for other participatory and preventive health interventions. The fourth section provides a frank discussion of the trade-offs and lessons learned from the Indonesian experience and includes a review of the results of several evaluations. The last section contains a series of recommendations to UNICEF for assisting countries in promoting a "growth movement" among health professionals worldwide.

I. POPULATION, NUTRITION AND HEALTH IN INDONESIA: AN OVERVIEW

The Republic of Indonesia is an archipelago of over 13,000 islands that form the barrier between the Indian Ocean and the South China Sea. It gained its independence in 1945, after centuries of foreign rule motivated by its strategic location on the trade route between India and China, as well as by its mineral wealth and climate, which was well suited to the production of such cash crops as spices, coffee, sugar and rubber. More recently, the discovery of oil and natural gas has figured significantly in its social and economic development.

The population of Indonesia, according to the World Bank (mid-1982), is estimated at 153 million inhabitants, which ranks it fifth among the nations of the world in total population size. Its current population growth rate is 1.9 percent (Moebramsjah, et al., 1982, cited in UNICEF, 1984). If the current rates of population growth continue, standard projections* indicate that Indonesia's population will be 212 million by the year 2000, and even with rapid declines in fertility, the population of Indonesia will approach 200 million in the year 2000 (World Bank, 1984b).

Although the country is vast, over 60% of Indonesia's population live on the islands of Java (90 million) and Bali (3 million), which comprise only 8% of the total land mass. The urban areas of Java are among the most densely populated in the world; on the other hand, many islands are remote, inhospitable, and thus sparsely populated. The country suffers

* Standard projections assume no significant changes in either the fertility rate, mortality rate, or migration behavior.

from the health and nutrition problems associated with great overcrowding, as well as from problems associated with inadequate transportation and communication within and between scattered populations.

The government of Indonesia has long recognized the critical nature of its population growth problem, and its potential for outpacing even the most promising strides in economic development. The government established the National Family Planning Coordinating Board (BKKBN) in its first Five Year Development Plan (Repelita I) in 1970. The purpose of this board was to assist in the formulation of country-wide population policy, to coordinate activities aimed at increasing contraceptive use and decreasing fertility, and to promote out-of-school education on population issues.

The BKKBN program expanded rapidly, a fact which has been cited as one of its key assets and is believed to have contributed to a slowing of the growth rate in the country as a whole (Griffiths, 1985). The program was initiated in selected provinces of Java and Bali; 10 provinces were added in 1974, and the remaining provinces were participating by 1979. By 1984, through the cooperation of the Ministry of Health, the program provided services through 7,500 health centers, 465 hospitals, and through a far-reaching community-based distribution system with centers in 48,000 villages (74% of all villages) and 108,000 acceptor clubs in sub-village units (World Bank, 1984a).

A more complete discussion of BKKBN, its distribution system, and the workers that staff it is beyond the scope of this report. The infrastructure that was created by the BKKBN program, however, was essential to the rapid expansion of the UPGK program and facilitated its rise to national stature.

Malnutrition is one of the most important factors affecting health and child survival in Indonesia. Protein-calorie undernutrition in its mild to moderate forms is estimated to affect 6.8 million children, or 33% of all children under the age of 5. Three percent of children under five suffer from severe protein calorie malnutrition. It is estimated that malnutrition, coupled with diarrhea and upper respiratory tract infections, is responsible for roughly two-thirds of all the deaths of children under five (Rohde, Hull and Hendrata, 1978). Iron deficiency anemia is quite prevalent, affecting approximately 9 million children, a significant percentage of pregnant women, as well as working men. The problem of vitamin A deficiency is widespread among children; there is an estimated incidence of 100,000 cases of nutritional blindness per year. Iodine deficiency is also prevalent in the goiter belts of Indonesia.

Improvements have been made in most indicators of child and adult survival in recent decades. The infant mortality rate (IMR), for example, has decreased from 150/1000 live births in 1960 to 102/1000 in 1982, though this rate is still considerably higher than that of other countries in the region. Changes in other health indicators during this period are listed in Table 1.

Table 1. Changes in Indicators of Adult and Child Survival: 1960-1982.*

	<u>1960</u>	<u>1982</u>
IMR (per 1000 live births)	150	102
Crude Birth Rate (per 1000 pop.)	44	34
Crude Death Rate (per 1000 pop.)	22	13
Child Death Rate (aged 1-4 years)	23	13
Life Expectancy at Birth (in years):		
Male	40	52
Female	42	55

* Source: World Bank (1984b)

The observed improvements in health indicators are due to economic growth concurrent with increased investment in public health and other social development efforts. Economic growth, stimulated by rising foreign prices for oil and natural gas, resulted in large increases in the average annual growth rate for the gross domestic product, and the agriculture, industry, manufactured goods, and service sectors.

Health sector improvements include an increase in the official number of trained physicians and nurses, as well as large increases in auxiliary and community level personnel. For example, in 1960 the population-physician ratio was 46,780; by 1980 this had narrowed to 11,530 despite fairly rapid population growth. More important, however, was the increasing trend toward the provision of community health services during

this period. The government of Indonesia took the stance of supporting community-based programs and, beginning with family planning, actively trained large numbers of auxiliary personnel to work at the community level. The specific details of these services and the momentum that has led to their growth and expansion will be a major focus of this report.

II. UPGK: A DECADE OF PROGRAM DEVELOPMENT

A. Step One - Building Political Will

The planning of UPGK occurred at a time of increased awareness of the importance of good nutrition to productivity and national development. The process that resulted in this increased recognition of nutrition issues was addressed by Soekirman (1975) in a paper presented at the Conference of Nutrition and Government Policy held in Bellagio, Italy. He offered the following explanation for why the government decided to adopt nutrition in the Indonesian development policy:

First, the change is probably the fruit of the awareness period. There has been nutrition education since 1938; though it was very poorly planned it had an impact in increasing awareness. Second, there is new knowledge about the reciprocal effects of nutrition and national development. Third, the role of international agencies in "persuading" the government to adopt nutrition as a part of development is undoubtedly significant. Fourth, the political, economic and social situation in Indonesia at the present time is favorable for nutrition programs on a larger scale. With more stability, increasing incomes, and rising living standards, the government is able to attend to welfare issues, one of which is nutrition.

The presence of these conditions must be taken into account when we discuss the intention of creating a "growth movement" or attempting to transfer some of the managerial and strategic decisions of the Indonesian

program to other locations. To begin with, the Government of Indonesia has, since the 1950's, been involved in pioneering work in the field of community nutrition. One example of this work was the Applied Nutrition Program (ANP), which was started in the early 1960's with the support of UNICEF, FAO and WHO. This program, run through the Directorate of Nutrition in the Ministry of Health, was one of the first efforts aimed at combating malnutrition in the community itself through the use of local volunteer workers. The program had the following objectives:

- 1) to improve the availability of high protein foods by increasing the production of soybeans, pulses, fish and poultry; and

- 2) to improve food intake by aiming nutrition education programs at pregnant and lactating women and their young children.

Pilot villages were selected for the program by the central government, and networks were established in agricultural extension, health and education agencies. Local village officials and other leaders were utilized to promote the efforts. Training centers were set up to train leaders and volunteers in both the production and education activities. The program relied on the use of donated foods for rehabilitative feeding.

The overall goal of the ANP was to demonstrate that improved production and consumption of food would positively alter nutritional status. An evaluation of the program, carried out in 1972-73, revealed some major weaknesses in the design, goals and objectives of the program. To begin with, it was found that the program emphasized production more than education, and educational efforts were believed ineffective. It was also found that the program did not identify target groups and there was no

linkage with other MCH activities. Program coverage was low, and the program itself was narrowly focused. Each year only 30 malnourished children in each program village were identified through weighing. They were then given 120 days of supplementary feeding. There was no continuity; education was focused strictly on the "four food groups," and the following year children in new villages were identified, weighed and given supplementary feeding. The ANP was also unsuccessful in expanding beyond its pilot parameters; its nutritional impact was limited.

The evaluation of the ANP had major implications for nutrition planning. First of all, it drew the attention of national program designers and policy makers to the importance of nutrition to national development. It pointed out that good nutrition was not only limited by the supply of food, but also by the use of that food within households. The report indicated that poor nutrition would hinder productivity and national development; activities to improve nutrition, however, had to focus on education to stimulate changes in food-related practices.

The second important implication of the ANP evaluation was that, by pointing out weaknesses in program design, the areas where future programs would require emphasis were indicated. The need for effective education, as noted above, was highlighted; the importance of community self-sufficiency, the use of local foods, and the need for improved program coverage, continuity and coordination with other health services were also revealed.

The evaluation of the ANP coincided with a period of increased support by international agencies for nutrition as part of development. These agencies played an important role in "popularizing" the issue. They

provided resources for experimentation with different program options, and, later, supported media and public campaigns to educate top bureaucrats and policy-makers about the need for coordinated action to improve nutrition (Rohde and Hendrata, 1983). Educational campaigns took place in the press, in meetings, and in other professional arenas to stimulate interest and keep political support high. This strategy has continued to play a key role throughout the decade of UPGK development.

The final condition that fostered commitment to a national nutrition program was that the political, economic and social climate in Indonesia was favorable for the development of nutrition programs on a larger scale. With greater economic and political stability, the government was able to look toward the future and recognized the need to concentrate more resources and efforts on programs aimed at improving the quality of life. The government adopted a "policy of equity" -- a commitment that development benefits should reach as many as possible. The national family planning program was already underway, and people were beginning to focus on the issue of family health as a result of the meetings and media campaigns described above.

Interest in nutrition as a national development concern was culminated in 1974, at the beginning of Repelita II, when a presidential decree asked for the establishment of an intersectoral nutrition board (including 10 ministries)* to oversee activities "to improve the

*This included the Ministers of State for Economics and the National Development Planning Agency, and the Ministers of Health, Agriculture, Internal Affairs, Information, Education, Religion, Industry and Finance.

nutritional health of the populace." This decree signaled approval to begin the design and implementation of a national nutrition program. Even with this decree, however, the burden of proof still lay in the hands of the nutrition planners and workers: a demonstrably successful program had to be launched to secure nutrition's clout in development policy and planning. In order to do this, coordinated action to develop the program strategy and strong leadership were needed.

B. Step Two: Formulating the Program Strategy

The formulation of the UPGK program strategy grew from the evaluation of the ANP as well as from the experiences of numerous professionals working in community nutrition projects. The ANP evaluation, as described above, indicated the need to concentrate on the use of local foods and to improve nutrition education by orienting it toward behavioral change. Pilot activities carried out by local PVO's and universities also contributed to strategy development. The program carried out by the Community Health Department of Gadjah Mada University (Rohde and Hendrata, 1983), for example, revealed that monthly growth monitoring of young children by their mothers with the assistance of village volunteers was feasible, understandable, and well accepted by community members.

Program strategists, a small group of dedicated professionals who met together formally and informally, decided to merge these findings for their selection of program priorities. In short, it was decided that the national nutrition program would adopt a communications and education strategy. The program would revolve around community-based growth monitoring with an emphasis on weight gain (the prevention of faltering

growth). Monthly growth monitoring sessions would be the tool for creating an educational forum to present information and messages to motivate behavior changes affecting the health and nutrition of children under 5 years of age and pregnant and lactating women.

A core package of UPGK program components was decided upon in the strategy formulation. These components included:

(1) monthly growth monitoring of all children under five, carried out by mothers with the assistance of village volunteers (kader) at weighing posts in the community.

(2) education provided at the time of weighing, with messages tailored specifically to the child's growth pattern in that particular month.

(3) the provision of nutritional first aid (iron folate tablets for pregnant women, vitamin A distribution, oral rehydration therapy).

(4) demonstrations of food preparation or similar activities in local nutrition centers (taman gizi) focusing on education about the use of foods rather than on nutrition rehabilitation.

Table 2 summarizes the different components of the growth monitoring program. A copy of the specially designed growth chart (the KMS) used to communicate the weight gain concept is included in Appendix A.

In addition to the program's basic components, a standardized monitoring system was developed to sustain community motivation. This system of reporting the numbers of children gaining, maintaining and losing weight in the community each month helped members as well as program administrators to evaluate community progress.

As noted above, UPGK program implementation was to be carried out through the use of community selected and locally trained volunteers (kader). They were selected on the basis of their ability to read and write and also on their interest and ability to act as a leader in the program. The community volunteers could be either men or women, but the program encouraged recruitment of local leaders and women active in village women's groups (PKK).

Table 2. Components of the Indonesian Growth Monitoring Program.

INDICATOR:	* Weight for Age
GROWTH STANDARD:	* Harvard
GROWTH CARD: (Appendix A)	* Specially designed "KMS" or "Rainbow" growth card
	* Shaded growth canals that de-emphasize traditional zones of Grade I, II, III, undernutrition
	* Red line that represents 60% of Harvard Median
SCALE:	* Local market scale (' <u>dacin</u> ')
PERIODICITY:	* Monthly
PARTICIPANTS:	* All children 0-5 years; emphasis on 0-3 year-olds
LOCATION:	* In community at local weighing posts
PROGRAM MESSAGE:	* A Healthy Child Gains Weight Every Month
PROGRAM MONITORING:	* At community level
	* For community benefit
	* SKDN system based on indicator of weight gain
PROGRAM GOALS:	* All children under 3 should gain weight each month
	* All children who reach the age of 36 months should weight at least 11.5 kg.

C. Step 3: Expanding the Strategy

The planning of Repelita III (1979-84) marked an important stage in the development of UPGK. It was decided at this time to expand the program nationally. The plan was to make a "first strike" for nutrition: rapidly expanding the program's coverage to build the support and momentum for nutrition that would ensure its place in development policy. The program's procedures were simple enough to be implemented by anyone who had had the brief training. The challenge for UPGK became one of finding an organization and management structure that would enable it to expand nationally in a short period of time.

The choice of BKKBN (the National Family Planning Program) to meet the organization and managerial needs came in 1979. BKKBN offered an infrastructure of village family planning posts and a field worker system as the principal vehicles for program expansion. The program already had established strong links with thousands of village-level community forums throughout the country. "Piggy-backing" on the BKKBN would speed up program coverage while creating the desired visibility and momentum.

The integration of UPGK with BKKBN was considered a mutually favorable arrangement. UPGK benefited from BKKBN's infrastructure for wide coverage, and BKKBN benefited from UPGK's resources to provide a more comprehensive package of family health services, which the former desired to offer in keeping with its message, "a small family is a healthy family." Neither program ran the risk of wholly dissolving into the other. However, there were serious logistical and conceptual tradeoffs to the rapid expansion of

UPGK. These will be discussed in Section IV.

With its integration into the BKKBN network, UPGK's goal under Repelita III was to cover 34,000 villages in 27 provinces by 1984. To meet this goal, UPGK also began working with the Ministry of Women's Affairs, whose network of village women's associations (PKK) could promote participation. The Ministry of Agriculture also cooperated, and in some villages agricultural extension workers developed animal husbandry and home garden projects to improve family nutrition. The Ministry of Religious Affairs contributed to the program by having formal and informal religious leaders promote it. This was done by citing religious teachings to support UPGK messages. By December 1983, the program was operating in 31,000 villages. This number has swelled to over 40,000 in the last year.

The UPGK program during Repelita III (1979-84) was one of flexible programming and cooperation among agencies. Flexibility at the local level, including details about program implementation, resulted in program variation as well as innovation.

D. Step 4: Refining the Program

Considerable effort -- before and after national expansion -- has been devoted to refining UPGK program components. For example, in the mid-1970's the Government of Indonesia made a loan request to the World Bank for a nutrition development project. The project (approved in 1977 for \$13 million) had the following objectives:

- 1) to strengthen and expand institutional capability for developing nutrition programs, undertaking operational research and training personnel;

- 2) to test nationally replicable measures to improve the nutritional status of selected groups; and
- 3) to assist in the formulation of a comprehensive food and nutrition policy and program at the national level.

Two of the field projects that came under the World Bank loan were requested and designed to perfect components of the UPGK package. One of the components, the Nutrition Intervention Pilot Project (NIPP), field tested information management and supplementary feeding strategies. During its implementation, NIPP became known as "UPGK intensive" because it had all the UPGK core elements plus an innovative approach to supplementary feeding, kader training and monitoring. Supplementary feeding was oriented toward rehabilitation and was targeted toward children who failed to gain weight for three consecutive months. It utilized a locally processed, pre-packaged mixed dried food (BMC). Although the supplementary feeding in conjunction with NIPP monitoring and information activities were later recommended for inclusion as core elements of the national program, integration has not yet occurred.

The other UPGK-related field component was the Nutrition Communication and Behavior Change Project (NCBC), which tested ways to strengthen the nutrition education system. The project was run by the Directorate for Community Health Education and concentrated its efforts on perfecting message design techniques, choosing messages for the program, developing a media strategy (which included both mass and face-to-face communications), and producing the materials for radio and village kader, particularly those the kader would use when counseling mothers at growth monitoring sessions. The NCBC field project was found to be successful -- children who had

participated in the NCBC program showed significant nutritional status improvement when compared with children in a UPGK program without the NCBC component. The difference was attributed to the program (Manoff International, 1984).^{*} Results from this pilot activity are also being considered for incorporation into the national program, but, as with the NIPP, integration has not yet been realized.

Regular refinement of the existing program continues. An evaluation recently supported by UNICEF (Fajans and Sudiman, 1983), and carried out in seven villages considered to be "models of UPGK excellence," revealed that innovations and refinements in UPGK implementation are common and important determinants of the program's success. Guidelines for the program are flexible enough to foster local experimentation and continuous refinement within the context of national goals. It is believed that this continuous refinement has led to continuous discussion that has helped the program maintain a high public profile. The possibility for ongoing program adaptation and improvement has kept professional interest stimulated as well.

^{*} See Appendix C for a more complete discussion of the results of the NCBC evaluation.

III. AN ANALYSIS OF PROGRAM STRATEGIES

Up to this point we have discussed the development and expansion of the UPGK program as a whole, emphasizing the processes that led to the popularization of child growth at the professional and national policy-making levels. Now we will turn our attention to the concepts underlying the approach, with particular attention to the growth monitoring activities and how concept and practice have resulted in increased community awareness, participation and support. The following subsection will focus on communications -- operational communications within the program and educational communications for mothers at the growth monitoring sessions.

A. Program Communications: Concepts and Practice

1. Concepts

UPGK, perhaps more than any other program, has depended on a strategy of information, education and communication (IEC). The primary goal of this strategy is to foster self-sufficiency and produce nutrition-improving behavior changes. The program teaches mothers how to use available foods to nutritional advantage, rather than distribute donated foods; other necessary resources, personnel and equipment are also found and furnished by the community. The program can be implemented by any volunteers who have received the short training course, and local market scales with slight modifications are used at the weighing sessions. Although the educational messages presented at the weighing sessions are determined at the central level and are based on the major nutrition problems facing the target population nationwide, the means for their communication have been adapted

to local conditions and reflect cultural, social and economic variations.

The ability of the program to accomodate regional variation, including flexibility in implementation, is consistent with the goals of a communications, rather than a service-provision, strategy. Accordingly, the educational messages must be delivered, understood, and accepted by program participants, and have to be relevant to the perceived health and nutrition problems of the target populations. These conditions can only be achieved through stimulating awareness at all levels of operation and creating the appropriate forum for action-oriented discussion at the weighing sessions and during home visits.

UPGK program communications exist on two basic levels: within the program (among personnel) and outside the program (interaction with policy-makers, leaders, and community members). The first level, that of ongoing communication to reinforce staff morale and commitment, is frequently overlooked in many programs. UPGK has actively promoted itself through contests, billboards, the media and local organizations to stimulate the contributions of its staff. The end result is that workers, having a sense of ownership in the program, are motivated to carry out activities.

The program has also employed an ongoing communication strategy with professionals, the general public, and politicians. This has taken place in formal meetings with leaders and bureaucrats to present information on the goals, operations and achievements of the program. This element of popularization has kept the program visible and has enabled UPGK to become an important part of the political agenda.

With respect to the program's educational communications, there are

several basic underlying concepts, many of which have been discussed before. To begin with, the program is preventive in nature. With its focus on continuous weight gain, it does not attempt to stigmatize children with current or past growth problems, but emphasizes positive, concrete and continuous improvements in feeding that will produce the desired nutritional improvements. This is what is meant by a behavioral change orientation.

2. Practice

The "tools" to apply the basic communication concepts are:

- 1) the weighing activity itself
- 2) the clear and simple growth chart
- 3) the flipcharts used during counseling sessions

Individual counseling during the weighing sessions is brief and not meant to overburden mothers. The messages in the materials are unified in style and content.

The actual physical organization and activities carried out at the weighing posts vary. In some instances the only information kader provide is on-the-spot advice when they weigh children. In other cases, a special area is set aside where women bring their children after they have been weighed and their growth charted. In these areas mothers receive individual counseling about the growth pattern of a child and the relationship between that pattern and other health determinants noted on the chart (i.e., diarrheal illness, immunizations, etc.). It must be added that counseling that addresses all of the information on the growth chart is more the exception than the rule. Furthermore, evaluations have found

that kader give too limited or conflicting advice. In some villages, for example, kader promoted bottlefeeding as a means to improve infant food intake (Fajans and Sudiman, 1983).

Suggestions for ways to improve the educational communications provided at the weighing post will be included in Section IV. At this time, however, it is relevant to mention the results of the evaluation of the NCBC pilot project to improve the educational messages and their delivery.

The NCBC applied the principles of social marketing to the diagnosis of behavior, the identification of problems that could be effectively addressed through education, and the development of a complete communications strategy. This entailed the collection of qualitative data to establish educational objectives, to determine their conceptual validity, and to identify the most appropriate communication channels for their application. The media for the program were kaders and radio. Evaluations of impact and cost per beneficiary were carried out.*

The following features of the pilot program set it apart from the standard UPGK program and contributed to its success:

- o the way target audiences were identified, analyzed and segmented;
- o the way villages were brought into the preparatory inquiries about health and nutrition problems -- identifying the particulars of problems and proposing and testing solutions;

* The steps carried out in the investigative process are included in Appendix B. Selected results of the evaluation are included in Appendix C.

- o the way the villagers contributed to decisions about the messages, media, and media materials;
- o the way the project designed messages and planned and executed the media strategy;
- o the way the project trained kader to focus on priority issues, while enhancing morale and making the most of their precious donated time; and
- o the way the program was monitored.

The qualitative investigation provided the opportunity for finding out the mothers' sources of information and the impact of the mass media. It was learned that mothers' radio listening in Java was "lighter" than had been anticipated from the available data on ownership of working radios. Having planned a significant role for radio, the planners found it necessary to find ways to compensate for radio's shortcomings. The medium of the kader network would have to be relied on to a greater extent than planned. This placed an additional burden on their training and the materials they were to use: these had to be designed for a more intrusive effect on the target audience in terms of message impact and the frequency than is usual.

The seven individual messages for each audience segment were translated into scripts for radio and posters for the kaders to teach from and distribute to mothers. The radio scripts were short message minidramas. But the posters were a radical departure from traditional poster design to meet the new media requirements of intrusive impact and message frequency. The response to this was the Action Poster, which produced a new dimension of audience involvement with the poster medium

several times a day in much the same way that radio intrudes into audience awareness simply by repeating the message.

One important result of the impact evaluation was reported in Manoff International (1984, pp. 24-25):

The project's effect was particularly pronounced in families where the mother had one to five years of education. Similar to the pattern observed in other studies the comparison mothers with less formal schooling tended to know fewer nutrition facts and to have a higher rate of malnutrition among their children. In the NE sample, the mothers with less formal schooling had a nutrition knowledge score equal to those with more education, and their children had an equivalent nutritional status as well.

Analysis of the project's communications component indicated that it was the quality of the education which had made a difference, particularly with the face-to-face communications in which the kaders were aided by the Action Posters. Both the action posters and the use of the weighing sessions as educational forums made possible the precise delivery of the precise message to the precise mother at the precise time of her precise need. Important increases in knowledge appear to have been achieved by using the radio message for reinforcement of the kader's work in the one province where the messages were given exposure.

Ho (1984) estimated that the annual cost per beneficiary for this pilot project was US \$3.94; this could be reduced to about US \$2.05 if program coverage were expanded. The cost per child with nutritional status improvement was US \$9.85 per year in the pilot; it would be approximately US \$5.13 per year for an expanded program.

B. Training Program Implementors

1. Training of the Trainers

The UPGK employs a "vertical approach" to training program implementors. This approach refers to a process of instruction whereby all field personnel, regardless of their prior level of expertise, or location within the administrative system, receive the same basic training in program goals and operational procedures. The rationale underlying this approach to training is simple: when all workers receive the same basic messages about program priorities and technical procedures, there is less confusion about implementation, and there is a greater likelihood that the program will be carried out with uniform objectives throughout the country.

The decision to follow a vertical approach to training was made for several reasons. To begin with, the program is so widespread that training had to be kept simple both for financial and logistical reasons. The development of different categories of training materials would have been prohibitively expensive to produce and distribute. These high costs, in turn, would have discouraged further program expansion.

In addition, the program relies heavily on the use of unpaid volunteers with little or no previous experience in programs of this type. Their training, though only five days long, must impart the necessary skills for program success. Short-term training is desirable so that the program can be carried out by any interested individuals or groups. Vertical training, or the use of the same basic messages for all program personnel, eliminates the message distortion often created when several

institutions are carrying out the training, or when higher-level workers simplify or enlarge on what they have learned in their own training to make concepts and practices more understandable to less educated personnel.

In the vertical approach, a 100-page field manual is used to train both the trainers and the local volunteers. Higher level professionals are responsible for training the trainers; these trainers then go to the communities, meet with local leaders, and select and train village kader. This approach has facilitated the process of reducing message distortion and insuring greater uniformity in the interpretation of program goals.

The vertical training approach was also favored because of the need to manage the overlapping program objectives of UPGK and BKKBN. The vertical training insured that UPGK goals were simple enough that supervisory personnel with no formal training in nutrition could carry out their jobs effectively. Also, supervisory field workers often have primary allegiance to one of the other sectors participating in the program (family planning or agriculture, for example). By having uniformly stated goals and relaying them through basic messages at training, UPGK ran less of a risk that supervisory personnel would abandon UPGK-related responsibilities when demands on their time increased, although it could not prevent that from happening altogether.

2. Kader selection and training

Village kader are selected by local leaders or by members of the community. Selection criteria include literacy and leadership ability, and most village kader are mothers, members of the local women's group, or both. After selection, kader attend a five-day training session in the

community. There they are familiarized with the weighing facility, and are instructed in the following procedures:

- *how to organize the growth monitoring sessions at the weighing post.
- *how to weigh children, plot growth on the growth card, and interpret observed growth pattern (including the recognition of faltering growth).
- *how to advise mothers in the case of growth faltering, the appropriate diet for children at different ages, when to distribute nutritional first aid (ORT, iron folate to pregnant women, vitamin A), and when and how to refer children for further nutritional rehabilitation in cases of severe undernutrition.
- *how to accurately record growth statistics for the community monitoring system.

A list of the knowledge and behavioral objectives for kader training are included in Table 3.

Training the kader in the techniques of proper communication and counseling is perhaps the most difficult procedure. This is due in part to the fact that it is essentially impossible to teach interactive communication through a lecture format. Training must include on-the-spot experience in advising and motivating mothers.

Table 3. Knowledge and Behavior Objectives for Nutrition Kaders

A. The Growth of the Child

At the end of the training, all nutrition kaders are expected to:

- * understand that proper growth reflects good health
- * understand that proper growth can be observed from a regular monthly weight increase
- * understand that a child should be weighed every month to know his growth and health
- * be skillful in weighing children and in recording the weight in the KMS (growth chart).

B. Food for the Child

At the end of the training, all nutrition kaders are expected to:

- * understand the importance of food for maintaining health and growth
- * understand how to prepare healthy food using local, inexpensive ingredients
- * be skillful in giving information to mothers on what kind of foods their children need at certain ages and its connection with whether or not there is an increase in the weight of their children in the month concerned.

C. Eye Health

At the end of training, all nutrition kaders are expected to:

- * understand the importance of dark green vegetables and yellow fruits to maintain healthy eyes
- * understand that night-blindness is the initial symptom of blindness and that the sufferer should therefore be sent immediately to Puskesmas
- * be skillful in giving information to mothers on good foods for healthy eyes.

D. Anemia

At the end of training, all nutrition kaders are expected to:

- * understand that the way to preven tanemia is to make a habit of eating dark green vegetables every day
- * understand the results of anemia
- * be skillful in finding sufferers of anemia by asking about symptoms and examining the tongue of the sufferers (comparing the tongue with the color of the one found in the colored screening card).

E. Diarrhea

At the end of training, all nutrition kaders are expected to:

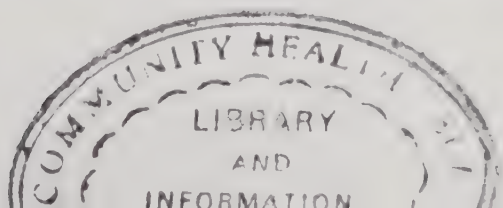
- * understand that diarrhea is a disease and that this disease is dangerous, especially for children
- * understand that this danger is caused by the loss of body liquid through diarrhea and for this reason the most important action to overcome diarrhea is to give the sufferer liquid (drink)
- * be skillful in preparing sugar salt solution and oral rehydration solution and to give it to the suffering child correctly.

Source: Soetarto, A., et al. (1979).

The techniques involved in growth monitoring, particularly the accurate weighing of children, require repeated experience and close supervision. The more on-the-job experience the kader receives, the better he or she will become at accurate weighing. Continuous supervision and periodic in-service training is the key to insuring improved accuracy. Unfortunately, in Indonesia, training and supervision suffered when the program expanded rapidly. This resulted in much variation in the quality of counseling, as well as some unreliability in weighing and program recordkeeping. In the future these shortcomings must be corrected. The training program may need to be amplified, increased in duration, or set up to include specialized training in one or more areas (Sahn, 1983; Fajans and Sudiman, 1983). Such specialized training will result in at least one kader per community gaining expertise in a given procedure. Kader trained in specialized procedures will then be able to advise others if they have difficulty in carrying out specific tasks. Additional suggestions for how kader performance can be improved are included in Section IV.

C. Program Information Systems

Program monitoring begins in the community, and it is carried out for the benefit and motivation of community members. The concept underlying the community monitoring system is that, "just as the mother needs to know the growth pattern of her children, the community ought to know the growth of its children." The monitoring system is consistent in its use of one indicator: weight gain. Information on the number of children gaining, maintaining and losing weight at the weighing sessions is aggregated and presented to the community each month, and each participating parent knows that his or her



child is an element of the community statistic.

Indonesia has faced a great challenge in the development of a monitoring and management system based on weight gain. This system has positive and negative aspects, as well as well-defined capabilities in terms of what it can and cannot reveal about the nutritional epidemiology of the community. This system can provide a rough estimate of the local nutrition situation; it also has the capacity to indicate trends (seasonality in growth patterns, for example) if care is taken to account for observations influenced by the age structure of the participating population. A sudden drop in the number of children gaining weight in the community, for example, will trigger an investigation (by health professionals); the possible causes might include a measles outbreak, seasonal food or time availability that influences food preparation and infant care, or other sociobiological explanations. The identification of this information should result in an action-oriented response.

In order for the program monitoring system to function effectively, it is important that the data is compiled and analyzed at each level and that some action is taken. Action must begin with the individual mother (in counseling related to her child's growth); it must continue at the weighing post with the compilation of growth data on children in the community.

Monitoring at the weighing post follows the SKDN system:

S = the number of all children under five in the community

K = the number of children who are registered in the program and have a growth chart

D = the number of children who attend the monthly weighing session

N = the number of children gaining weight that month.

Each month this information is compiled, analyzed, presented to community leaders, and sent to the next administrative level by the kader. To do so, of course, requires considerable clarity about the numbers that must be reported and the forms to use. There has been some disagreement about whether community personnel truly understand the results of tabulation procedures. Others have suggested that the system be simplified to fewer components to eliminate reporting on conditions that cannot be easily influenced through direct action (Fajans and Sudiman, 1983). In the NIPP pilot program described above, kader were successful in handling program statistics and in generating actions appropriate to their interpretation.

Although the kader is expected to pass on information, the weighing post is the most important level for data generation and information sharing. At this level the community itself manages and reacts to the program; community members can direct actions in response to growth statistics -- home visits can be made, nutrition center (taman gizi) activities can be initiated, and referrals for further rehabilitation can be followed up. The focus of monitoring at the weighing post level is the identification of concrete actions the community can take to improve its nutrition situation. Monitoring activities at other levels should foster this ability. The word 'can' is used in this context because the program still seems to be lacking the action-orientation implied here.

D. Growth Monitoring as an Entry-Point for Other Community Activities

Growth monitoring is the only activity within primary health care that is both community-based and recurrent. For this reason it provides the ideal setting for effective and continuous interaction between a program and a community. In Indonesia, community volunteers educate families about several primary health care topics and promote the corresponding interventions: the treatment of diarrhea, immunization, breastfeeding, and maternal and child nutrition. New participants in the UPGK program are recruited through BKKBN-sponsored family planning acceptor clubs. The program is intricately tied to local women's groups (PKK), which engage in community improvement, education and income-generating activities. Gardening, animal husbandry, and other projects to increase family food production also are carried on in some villages in conjunction with UPGK activities.

In addition to the services provided at the community weighing post, demonstrations and other activities for mothers are held in local nutrition centers (taman gizi). The exact nature of the activities held in these centers varies according to season, time and food availability (Fajans and Sudiman, 1983). Some communities have established innovative mechanisms for fund-raising to keep these activities going. The major activities at the nutrition center include the group preparation of new recipes and meals, complemented with discussions about family health issues.

Group activities are reinforced with home visits by village kader. Such visits provide additional face-to-face contact, the opportunity to supplement the vital statistic registry, and more personal interaction in mothers' homes. The combination of group and individual interaction, with

its emphasis on education to promote behavior change, is mutually reinforcing in that kader can see first-hand why some suggestions for special food preparation have not been carried out and that they can provide additional advice on home improvements.

Given the reasons listed above, it is clear why UPGK has become a role model for implementing measures to improve child survival and development, increasingly becoming known as GOBI-FF. The important issue to remember when planning such an integration of activities is that the overall program and its individual components must not be overly complex or too technical. The key to success in Indonesia in terms of program integration has been the harmony achieved by basic educational messages delivered through different program channels, and the fact that all activities are community-based and simple enough for all community members to implement. Although improvements can be made in many aspects of program delivery, too great an emphasis on technical issues runs the risk of taking the program out of the hands of the mothers and family members and returning it to the professional domain.

IV. SPECIAL ISSUES ARISING FROM THE INDONESIAN EXPERIENCE

A. "Expansion by Explosion"

The very rapid expansion of UPGK had the effect of creating a very thin veneer over a very wide surface. Earlier, the conditions that gave rise to this strategy were described. Now we will review the effects this decision has had on the health system as a whole.

The purpose and effect of UPGK's rapid expansion was to create a

powerful momentum in community-level nutrition activities. There were funds available and development planners favored the "first-strike" for nutrition strategy. Although it was known that certain logistical problems would result, program experience guided decision-makers into risking immediate weaknesses in organization for the possible benefit of national coverage and an upsurge of resources and support.

Program planners were willing to take this risk because they knew that once the program was established, it would be difficult to dismantle. This created a potentially disastrous situation. It was felt, however, that if the program was operating in many places, it would be accepted as the de facto nutrition program. It was decided that "after-the-fact" program fine-tuning was preferable to a slow expansion and possible slow death if momentum faltered and public sentiment changed.

It is easy to argue against this basic strategy -- it was extremely risky, a possible waste of precious money, and the program itself had yet to deliver a proven impact. The argument for or against rapid expansion, however, cannot rest only on technical grounds, but must include the issues of organizational and bureaucratic politics. The very survival of a program depends on these issues and they must be granted greater importance. More specifically, the technical difficulties related to providing good nutrition education and reliable growth monitoring are given greater weight in program planning. Strategies to increase political will, budgetary allocation, and mass mobilization of public support usually receive less support. In Indonesia, however, decision-makers recognized the importance of both realities, but opted for widescale coverage and visibility, believing that the resulting momentum would sustain support for

the program that would make later refinements possible.

It is impossible to generalize and say that this rapid expansion could occur in other countries given a set of pre-defined conditions. In the case of Indonesia there had been a precedent -- the national family planning program had, since 1970, expanded very rapidly. Beginning as a pilot project in 500 villages, it had spread to almost all villages in Java and Bali within five years. Since then, it has become the basis for the national family planning program, and, like UPGK, has been refined and improved along the way.

The primary health care program, on the other hand, charted a different course. It started in selected villages in selected districts in each province, and was later expanded systematically to all villages and districts in the province. Judging from the present coverage of primary health care through this system, one could easily say that it has its weaknesses. The program failed to move fast enough to offer significant coverage. More importantly, it failed to create enough interest and excitement among program planners and decision-makers to generate the necessary political commitment. Even now, after ten years of enthusiastic promotion from the Ministry of Health, the program barely achieves a meaningful national coverage; political significance has been reduced to that of "routine activity."

Through rapid expansion, UPGK has been able to enhance national awareness of nutrition problems and maintain political support. Also, the fact that there are presently over 40,000 villages involved in the program on a monthly basis has resulted in a new balance in the total health

system. This "pull factor" means that other government programs will be more open to the idea of utilizing the community as a locus of future efforts and investments.

B. Kader Selection, Training and Supervision

1. Selection

UPGK's selection of kader raises several issues. To begin with, village kader are selected locally on the basis of criteria that include literacy, interest in the program, and leadership ability. Literacy is a selection criterion because kader must be able to read and write to perform recording and monitoring tasks. The emphasis on literacy and educational attainment has had its drawbacks. In many villages the number of literate women is very low, which severely limits the pool of eligible candidates. Literate women tend to be younger, often unmarried, and frequently without children. Thus, though better educated, their credibility with mothers about health and childcare issues is limited. In addition, women from patrilocal villages go to reside in their husband's village upon marriage, which accounts for a high attrition rate among kader in these areas.

Fajans and Sudiman (1983) found another reason why educational attainment was associated with higher kader drop-out rates. In matrilocal villages (where women remain after marriage) literate women tended to also hold jobs as teachers or government workers. In the village of Koto Hilalang, the authors note, job responsibilities, following training, "interfered with their participation in weighing post activities and they soon lost interest in the program."

Whether literacy improves a kader's ability to communicate with other

village members is not known, nor is the degree to which literacy as a selection criterion is appropriate or necessary. Since not all kader responsibilities require writing skills, it is possible that literacy could be waived for at least some of the volunteers. In locations where the level of literacy is low, it may still be possible to carry out a community-based growth monitoring program, but special attention would have to be given to strengthening training and supervision beyond what is recommended in this report.

The high drop-out rate among kader is a serious problem in itself. In one location, an evaluation found that as many as 50% of all trainees dropped out within one year of their training (Underwood, 1982). Explanations for kader attrition have included: conflicting time commitments, loss of interest in the program due to a vague understanding of program messages, poor supervision, inadequate training and no follow-up. The severity of the attrition problem nationwide has not been determined; nor has the cost of attrition to the program as a whole, in terms of retraining and the loss of continuity. Small operational evaluations will have to be carried out to identify why these kader are leaving and what measures can be taken to reduce the problem.

2. Training and Supervision

One of the most thorny operational problems created by rapid expansion is that of providing adequate training and supervision of local volunteers. This is at the root of many other programmatic difficulties. For example, it is clear that in many instances kader training is simply inadequate. Many kader have left training without the necessary technical confidence to

carry out their responsibilities reliably and effectively. Others have failed to retain the basic educational messages and communication methods. These insufficiencies invariably harm the program, because confidence and effective communication are essential to the volunteers' work.

In-service training and continuous supervision have been suggested as remedies to the problems associated with short-term training. In the more successful UPGK villages, kader, supervisor and health center workers have independently begun their own forms of continuing education (Fajans and Sudiman, 1983). However, overall, kader supervisors often lack technical knowledge of health and nutrition matters. Furthermore, they are not always sufficiently trained in supervisory skills. They are frequently over-burdened by the growing number of weighing posts they have to supervise in each village, and there appears to be only limited coordination with local health centers, whose staff are expected to monitor the supervisors' work. Health clinic personnel (midwives and nurses), on the other hand, often have neither the time nor the numbers to provide supervision on a regular basis. Supervision, when it is carried out, most often only pertains to financial accountability and seldom to technical matters.

The supervisory system could be greatly improved if efforts were directed at spelling out: 1) who is to be supervising whom; 2) actual schedules for supervisory visits; and 3) what should be done during a supervisory visit. A checklist of tasks would aid this considerably. Coordination and health center technical support must also be improved.

C. Coverage

Perhaps the most important shortcoming of UPGK as a whole is its low coverage of children (40%) in villages where weighing posts are already established. This is a very serious problem because non-participating children may well be those most in need of the services. No analysis has been done so far to determine who the non-participants are, and why they do not participate. It is important to know whether, in fact, they are the worst off and if there is any common reason for their lack of participation (opportunity costs are too high, they cannot communicate with the kader, they are unaware of the program, etc). During the consolidation phase of the program this area of investigation and improvement must be emphasized. Expansion must be aimed at improving the quality of existing services and coverage before setting up additional weighing posts in other locations.

D. Education and Communication

Weaknesses in the kader's ability to fulfill his or her education and communication role have been cited frequently in UPGK program evaluations (Manoff International, 1984; Sahn, 1983; Fajans and Sudiman, 1983; Underwood, 1982). The weakness is due, in part, to the inadequate training described above. Another problem with respect to these activities is that many times the advice kader give to mothers whose children are not gaining weight is not practical. Evaluations have shown that mothers do understand the message "weight gain is good", and that they recognize increases, losses, and stabilization of growth on the chart. There is evidence, however, that the standard recommendations are too limited and rigid to produce the desired behavioral changes.

Several evaluations have noted also that the message to increase the frequency of feeding for weaning-aged children is not well understood or acted upon. Fajans and Sudiman (1983) suggest that current nutrition messages be made to stress increased caloric intake for all children. They add that messages emphasizing the importance of increased feeding following illness, the dangers of bottle feeding and the value of colostrum be included in the program's repertoire.

There is a need for more intensive communications research to develop more appropriate messages and new ways of communicating with community members. Kader could be supported in their role by the increased use of mass media for group teaching and training and by the use of radio as a forum for discussion. They could be provided with cassettes of radio messages and songs to use at talks before community organizations or groups of mothers. The training manual can also outline more clearly ways in which advice can be discussed with families.

Besides innovations in the messages, the evaluations have found that UPGK needs to use smaller forums for counseling. Kader often work with 50 to 100 mothers per group. Although the kader training manual sets the maximum number at 50, even that may be too high. One program objective of having mothers with children who are gaining weight share their knowledge and practices with mothers whose children are not doing well is not happening regularly; its impact, when carried out, is unknown.

E. Referral

The most basic problem with the referral mechanism is that workers do not know which cases require referral to the health center. The number now being referred is insignificant. The uncertainty of health center personnel about what to do with the children who do get referred compounds the problem. There is a desperate need for clear, uniform, and step-by-step instruction on the appropriate procedures.

The second problem with the referral system is that it is unclear who should pay when medication or supplementary feeding for the referred child is indicated. These procedures must be worked out at the central level so that mothers of undernourished children receive treatment free of charge. A possible answer to this dilemma would be to issue coupons for free treatment to those referred by the weighing post.

It is important that the rehabilitative and educational components of the program are maintained in proper balance. The balance, however, is very difficult to define and more so to achieve. Too strong an emphasis on rehabilitation would shift the program's emphasis from education, promotion and prevention to feeding only. This would also create dependency on non-household or non-community foods. Such a program is certainly too expensive for any government to maintain. Experience, furthermore, has shown that when food is distributed within a program, it tends to dominate program operations. The distribution of food in a monthly weighing forum would change it to a food distribution forum, and educational activities would be pushed aside. Taking away the motivation to prevent faltering growth in all children will undermine self-sufficiency efforts.

On the other hand, it is recognized that something must be done for

children whose growth falters. If the program is unable to help those most in need it will lose credibility. The present design of separating activities -- the community as the forum for education, the health center as the forum for rehabilitation -- is a sound strategy. Unfortunately, the current health center treatment component is too weak. It needs better design, organization, technical guidance and money.

F. Monitoring

At present, weighing data is transferred from the weighing post to the village, then to the district level, and from there, directly to the national computer (although copies are made for the regency and province statistics registers). It is firmly believed that not enough analysis is being done at the local level (weighing post). There is too much "pushing upward" of information without sufficient analysis and feedback to the levels where direct action can be taken. The aggregated SKDN data is of little value; the disaggregated information, on the other hand, could be put to better use. Program managers need to be made aware of the potential uses of the routinely collected data, and the data collection procedures must also be reviewed and streamlined for maximum clarity and use by local personnel.

The data generated by the SKDN system is meant to provide information on weighing activity performance. The local program cannot use the system to determine the actual nutritional status of children in a community. Because such information is crucial for planning, regular nutrition surveys may need to be conducted to obtain it. Other systems will need to be devised and tested when additional data needs are identified.

G. Program Impact and Cost

1. Impact

The generation of widespread awareness and overwhelming commitment to the national nutrition program have been UPGK's most important impact. The program has been successful at creating a growth movement at the community level that could further be developed into a broader, community-based movement to improve child survival and development.

In terms of other areas of impact, most analyses of UPGK have taken the form of case studies to understand the process rather than the results of the program. Understanding and reviewing the process is essential for program refinements, and these evaluations must be continued. The process evaluations that have been carried out to date, though not representative of the entire program, have provided important insights into various areas of program impact. These studies have indicated encouraging results in terms of communication, knowledge attainment, and behavior change. The central message of "weight gain is good" has been well understood and accepted by community members. In addition, monthly weighing, in itself, has become a highly popular community activity, and this, too, is an important impact. Other messages, about ORT, immunizations, and breastfeeding are also improving knowledge as well as health- and nutrition-related practices (Fajans and Sudiman, 1983).

Program-wide evaluations of the direct nutritional impact have not been conducted so far. Baseline data has been collected by the Nutrition Research and Development Center for approximately 100 villages. This data included the height, weight and age of 15,531 children during the first

month of weighing activities (Djumadias, et al, 1982), and would allow for further examination of anthropometric change in these populations.

Technically speaking, it is extremely difficult to demonstrate the nutritional impact of a program this size, due to the presence of a large number of intervening variables, and the difficulty in establishing adequate controls for the evaluation. It is critical, however, to make a serious attempt to manage the complex set of problems associated with nutrition impact evaluation because further investment in the program will be difficult to justify in the absence of this information. This issue must be confronted by nutrition planners in all programs; the need for an appropriate evaluation design for national programs must be addressed.

2. Cost

The "piggy-backing" of UPGK onto the existing family planning network constituted a significant cost-saving strategy. Even with this integration, however, the incremental costs incurred during 1979-82 by the government and UNICEF still amounted to \$12.5 million. This equals \$2.05 per child per year for the UPGK "basic" package, which consists of the growth monitoring and educational components only. The figure is elevated to \$10.73 for the "complete" package, including agriculture and food production activities and subsidies for supplementary feeding. This extra cost for the complete package is considered worthwhile because these activities are targeted to poorer and food-deficit villages (UN, 1984).

During the same period (1979-82), the person-hours contributed by volunteers to the program was valued at \$39.2 million. This figure significantly exceeds the total of government and UNICEF expenditures, and

underlines the magnitude of actual program costs shared by the community. In the future, more responsibility will be shifted to the community for support of the supplementary feeding activities. Judging from the results of the case studies, the expectation of greater community support is not unrealistic. In fact, a significant number of villages have been supporting supplementary feeding activities on their own initiative.

The distribution of program costs varies over time. After the initial investment in program start-up (in this case a burden carried primarily by BKKBN), program operating costs are significantly reduced. The cost of program maintenance is relatively lower than the capital investments required for the purchase of vehicles, parts and other materials required to get the program off the ground. Further reductions in start-up and operating costs can be realized if the same delivery system carries additional measures to improve child survival, health and development.

In the final analysis, the discussion of program cost can only be meaningful if it is related to program benefit. As mentioned above, the question of determining program impact, and hence benefit, is very complex and in need of serious attention. This issue must be confronted in the immediate future; the determination of an appropriate evaluation design for a program of this size is the necessary prerequisite for further analysis of UPGK cost-benefit.

V. RECOMMENDATIONS TO UNICEF FOR ASSISTING COUNTRIES TO "POPULARIZE GROWTH"

1. UNICEF should foster national level political commitment to programs that concretely recognize the importance of growth to personal, community and national development.

2. UNICEF should take steps to insure that professional capability and commitment exists in countries where it is promoting the development of community-based growth monitoring programs. Experience has shown that professional commitment to, continuing contact with, and refinement of field activities is critical to the success of community-based programs that require technical support. UNICEF should support campaigns similar to the ones carried out in Indonesia, utilizing appropriate media resources, to generate professional commitment. It should also support program experimentation and refinement to insure continuous professional support.

3. UNICEF should provide technical and logistical support for program planning and operations. It should advocate and support community-based activities stressing the importance of growth with ministries of health, as well as with other sectors. UNICEF should provide a source of funds for feasibility, impact and cost studies on country- and region-specific innovations in core activities. They should also support the dissemination of information on multi-sectoral programs.

4. To directly assist countries with an expressed commitment to the popularization of growth, UNICEF should support all activities aimed at improving education and communication strategies. In Indonesia these were the cornerstones of the program, yet by all accounts they were notably

weak. Some experiences with training and message development were very positive in this area (NCBC, for example), and should be tried elsewhere. If proven effective, they, too, must be popularized.

5. UNICEF should assist countries by providing technical support in the development of training and supervision programs. Members of a task force or special committee should be made available to provide on-going technical assistance. Such experienced professionals could play a valuable troubleshooting role.

6. UNICEF must be certain that in its popularization efforts it does not promise too much from growth monitoring. The key to the Indonesian program was growth monitoring's information, education and communication role. Although monthly weighing sessions and growth cards have demonstrated effectiveness as vehicles for nutrition education, many countries restrict growth monitoring to weighing and recording, eliminating the educational orientation altogether. It must be recognized that certain conditions favor the effectiveness of education more than others. It is most effective, for example, when educational messages are presented within a climate of motivation and participation. The creation of such a climate, however, does not occur overnight. UNICEF can best assist countries by instructing them on how to bring growth monitoring together with the education and communication strategy, and on how this combined approach can be incorporated into their national nutrition plans. UNICEF must also counsel countries to provide them with a realistic picture of the necessary ingredients for and expected outcomes of a successfully mounted community-based program. This will require making information about growth monitoring efforts in other locations available to professionals worldwide,

so that the governments considering such efforts will have the most recent and critical information about the procedures used, problems encountered, and lessons learned by others.

7. UNICEF should be in the forefront of international organizations in promoting the development of alternatives to programs to popularize growth, such as the one described in this paper. Because the Indonesian program may not be replicable in other locations, UNICEF should recognize the need for alternatives and should support innovative programs as well as research to develop them.

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Appendix A

KMS Growth Monitoring Card

**PETUNJUK
PEMBERIAN MAKANAN YANG SEHAT**



Selain
Air Susu Ibu
berikanlah
makanan tambahan

umur 4-6 Bulan



bubur tepung



buah

umur 6-12 Bulan



nasi tim

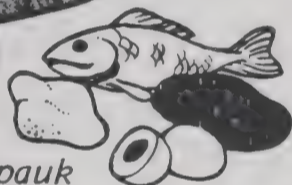
*sayuran
berwarna
tua*



buah



lauk-pauk



CONTOH BAHAN MAKANAN SEHAT



KMS

KARTU MENUJU SEHAT

Nama Anak:



**AIR SUSU IBU
makanan bayi terbaik**

Dibuat oleh
Departemen Kesehatan Republik Indonesia
dalam rangka kerja-sama dengan UNICEF
1981

DIISI OLEH PETUGAS

Klinik/Pos Pembinaan	
Tanggal Pendaftaran	No. Pendaftaran

Nama Anak		
Laki-laki	Anak yang ke	Tanggal Lahir
Perempuan		
Berat Badan Waktu Lahir		gram
Nama Ayah		
Pekerjaan		
Nama Ibu		
Pekerjaan		
Alamat		

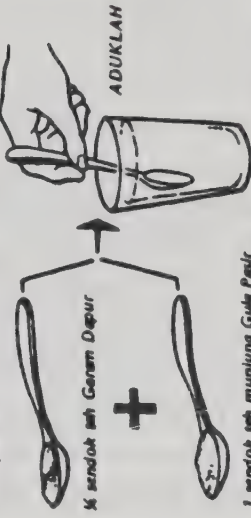
DAFTAR ANAK DALAM KELUARGA

No	Nama	Lk./Pr.	Umur	Keterangan

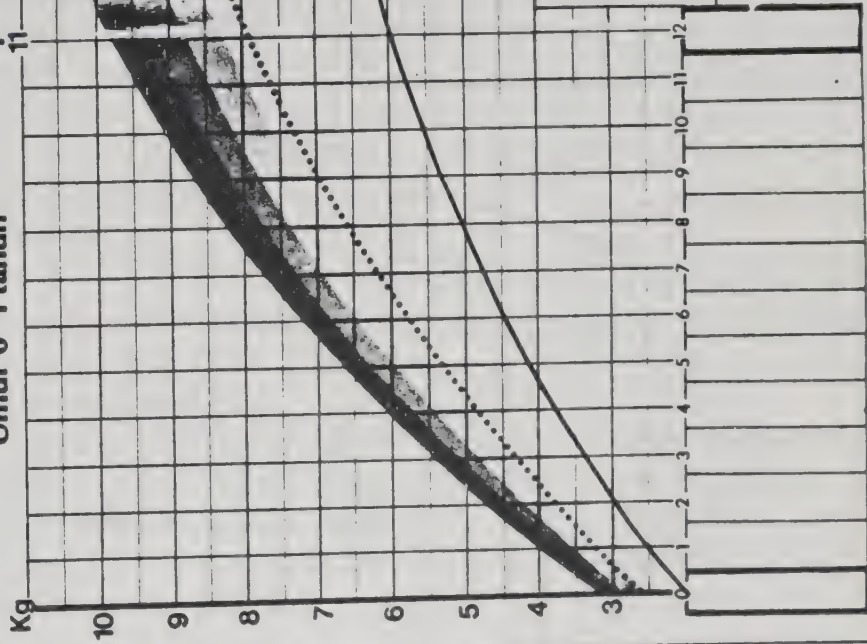
Kalau anak mencepet, berikan segera ORALIT

Kalau tidak ada, bisa membuat sendiri.

Campurlah:



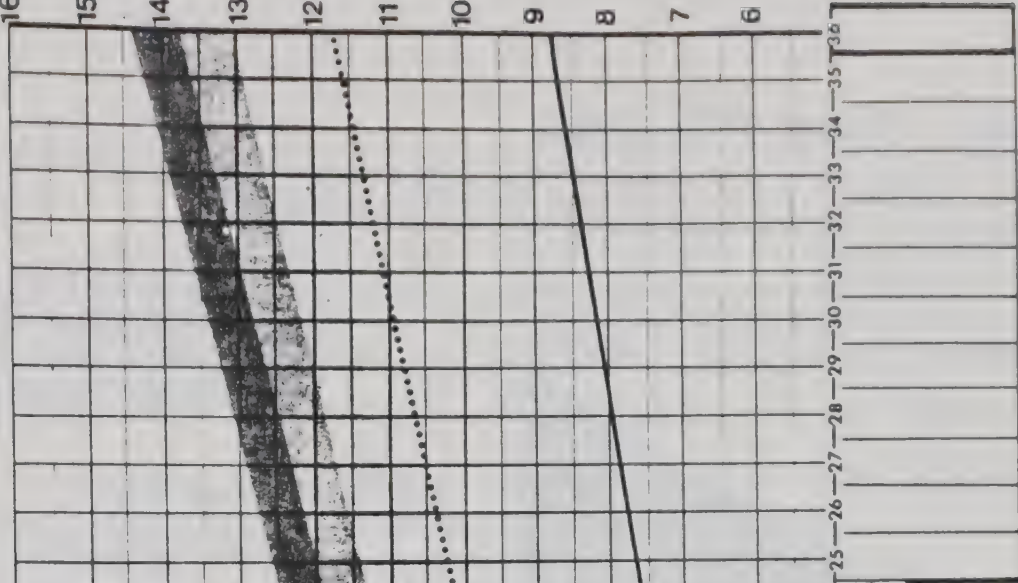
Umur 0-1 tahun



Isilah kolom ini dengan bulan dan tahun kelahiran anak. Isilah kolom-kolom berikutnya dengan bulan-bulan selanjutnya.

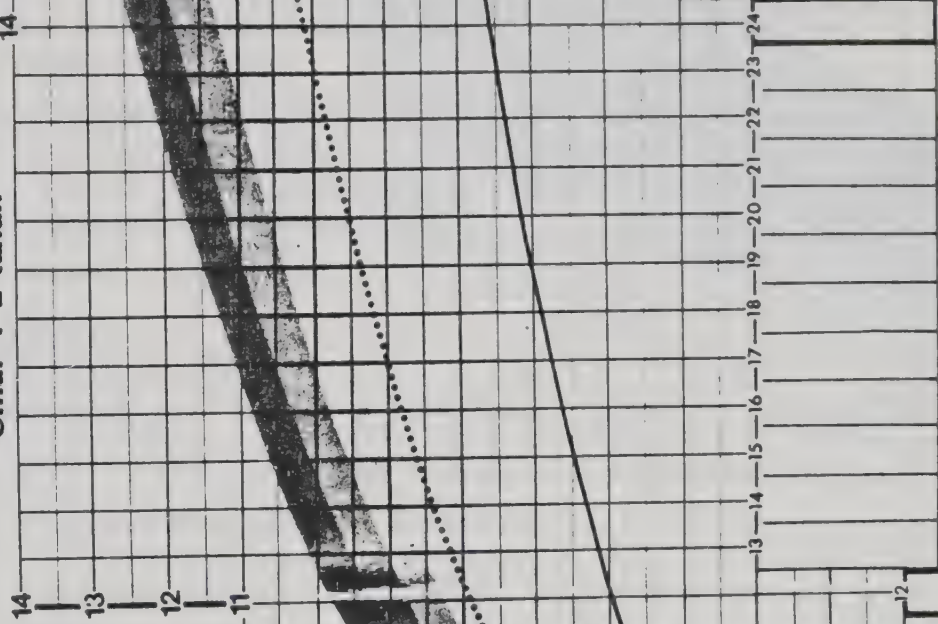
INGIN TAHU KESEHATAN ANAK ANDA?
TIMBANGLAH ANAK ANDA TIAP BULAN!

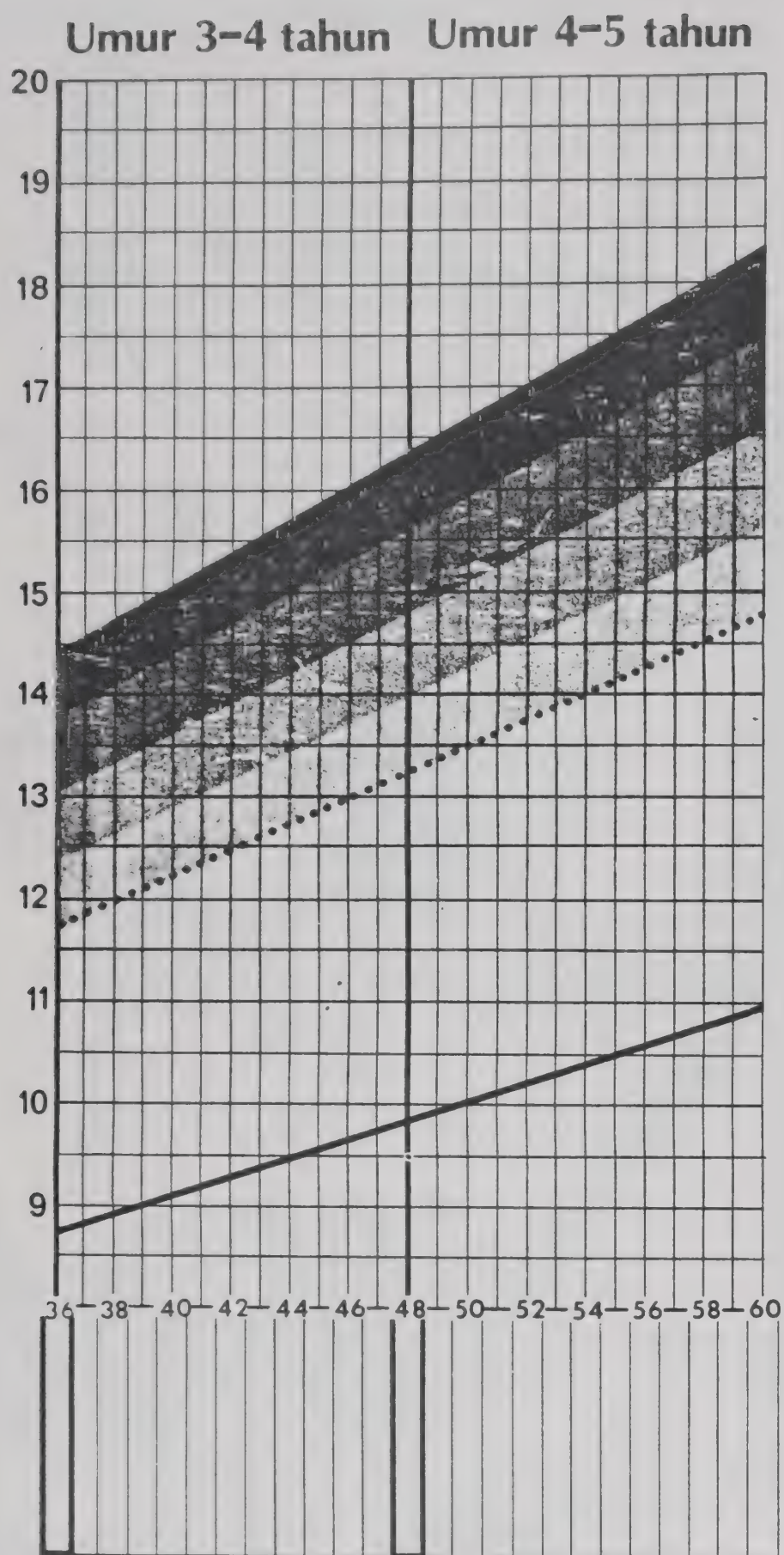
Umur 2-3 tahun



► Berikan segera 2-3 gelas larutan. Setelah itu, setiap kali mencepet berikan lagi satu gelas larutan.

Umur 1-2 tahun





IMUNISASI

I. Imunisasi Anti Tuberkulosa (BCG)

Tanggal Imunisasi :

Tanggal Imunisasi ulangan :

II. Imunisasi Cacar :

Tanggal Imunisasi :

III. Imunisasi Dipteria, Pertusis, Tetanus (DPT)

Tanggal Imunisasi ke 1 :

ke 2 :

Tanggal Imunisasi DT :

JADWAL IMUNISASI LENGKAP

Imunisasi Umur	BCG	DPT I	CACAR	DPT II	DT
Bayi 3-11 bulan	x	x			
Bayi 6-14 bulan			x	x	
Anak 6-7 tahun	x				x

CATATAN:

Jarak waktu antara DPT I & DPT II minimal 6 minggu.

Sebaiknya bayi sudah mendapatkan Imunisasi lengkap (BCG, DPT I, Cacar dan DPT II) sebelum umur 14 bulan.

Bila ibu minta imunisasi di pos vaksinasi maka juru imunisasi perlu mengisi kolom imunisasi yang tersedia.

KAPSUL VITAMIN A-DOSIS TINGGI

Tanggal diberikan ke 1 :

ke 2:

ke 3:

ke 4:

ke 5:

ke 6:

Appendix B*

The steps carried out in the investigative process of the Nutrition Communication and Behavior Change Component: Concept Testing and Establishing Objectives:

1. The community conducted a "self-survey," which consisted of weighing all children and charting their weights on a single community graph. Children with vitamin A deficiency complications and women with anemia were also identified.
2. A community meeting was then held to discuss the self-survey and to allow mothers and village leaders to suggest some solutions to problems identified in the survey. The meeting also was the forum to announce the household investigations and to get the village leaders' endorsement of them.
3. Central level staff met and developed a question guide based on the solutions that mothers and others had proposed to address specific health problems. The question guide (not a questionnaire with precoded responses) was structured to stimulate discussion and to explore the experiences of mothers in greater depth. Each guide contained four parts: 1) a set of demographic questions, 2) a topic section, 3) a food recall section, and 4) a behavior trial section. The first and third parts were the same in each example, the second and fourth parts were topic specific. For example, the second part of the guide for interviews with mothers of 5-8 month olds contained key questions on breastfeeding practices, foods and combinations of foods appropriate for babies that age, problems encountered in mothers' first attempts to give foods to infants, perceptions about the digestive abilities of infants at this age, etc. The behavior trial recommended in the fourth section of that guide was the development of a weaning food. A list of local foods that would both satisfy nutritional needs and be affordable for impoverished families was provided. It offered guidelines for investigators to develop the most feasible mixed food with individual mothers and provided questions for their follow-up visit, up to a week later, to document the results.
4. In each province a small investigation team was hired and trained in qualitative research and participant-observation techniques. All the members were women. Those who completed the work most satisfactorily had high school training in home economics, worked at the provincial level for a community program, and had children of their own.

* Source: Manoff International (1984)

5. The investigation team lived in the villages where they worked. In each of the villages, the families for the investigation were selected because they included a pregnant woman, a nursing mother, a malnourished child, or a child with diarrhea, preferably under the age of 2. A total of 330 households participated. No more than two relevant topics were investigated per household. Village midwives, shopkeepers, health workers, and officials also contributed.

6. Village kaders assisted investigators in locating the selected families. The investigators' work went as follows:

- a) To ensure that investigators met with mothers of malnourished children, the infants were weighed to confirm that their classification in monthly weighing records was correct.
- b) The investigator then used the question guide for one or two topics in the informal, leisurely conversation that followed, and she observed such things as the condition of the home and backyard garden, if one existed. In almost all houses, the entire discussion was taped to spare the investigator extensive note taking. The investigator later transcribed the tapes, making special note of key phrases and important concepts to come from the interview.
- c) Part of the interview was spent on making an assessment of what the mother or baby had eaten in the previous 24 hours. Using a dietary recall sheet designed by project personnel, the investigator recorded the foods and was able to quickly calculate whether the infant's or the mother's diet was deficient in protein, calories, or vitamin A.
- d) At this point, the interview departed significantly from the conventional household survey. Based on the age of the child and the outcome of the dietary recall (for mother or child), the investigator worked out particular dietary changes with the mother that would improve her own or the child's nutrient intake. For example, the mother of a 6-month-old with an inadequate intake of major nutrients would have been asked to suggest what she could add to her child's porridge that would be good for the baby's health and what she thought about several predetermined alternatives. The investigator and the mother then worked together to develop a recipe for an enriched weaning food. Since they did not follow a rigid format, they were able to use the ingredients that the mother had in the house, her methods for preparing foods, and her recipes, but adding critical ingredients, such as oil. The mother fed the new food to her child while the investigator was there, and she

and the investigator discussed what she liked or disliked about the food.

- e) Before leaving, the investigator promised to return in three to four days and asked the mother to continue to try whatever activity they had agreed upon. In the case of the weaning food, the mother would continue to give this food to her child several times every day until the investigator returned.

7. When the investigator returned, invariably the mother had modified the recipe to suit her needs and had some comments or questions. This opportunity for "product development" -- for trial, adaptation, and retrieval -- in the mothers' homes was one of the most important elements of the methodology. It was social marketing's adaptation of commercial product testing.

Establishing Objectives

The actual words the mothers used in the interviews were analyzed as the study progressed so that the question guides could be adapted to probe new hypotheses and ideas. At the study's completion, 330 households had been analyzed, and the project had a comprehensive picture of current attitudes and practices and of the rural mothers' openness to altering them. The qualitative research provided the substance of the program, which drew on the trials of new practices for the behavior change objectives and on the mothers' remarks for the motivational elements in the messages and for ideas for translating them into materials.

Of the many insights afforded by the investigation, one of the most important was identifying the practices susceptible to change. For example, women routinely discarded colostrum because they were told it was unclean. This had been shown by other studies. The investigation made a novel finding, however: the belief was not firmly held. Many women thought the custom was old-fashioned and had heard of other women giving colostrum to their infants with no harmful effects.

Other findings led to alterations in the standard breastfeeding messages. In the rural areas of Indonesia where the project took place, frequent breastfeeding was practiced by all the mothers through at least the child's first two years. Breastfeeding practices, which initially appeared to conform to medical guidelines, did not seem to merit special attention in the educational campaign. However, after discussions with many mothers, it became clear that there was a problem, because they complained that their infants cried often and could not be satisfied with breastmilk. As a result, they felt compelled to feed the babies solid foods soon after birth. Further observation and discussion led to the finding that women in Java were

primarily using the left breast to feed their infants and that women in South Sumatra primarily used the right breast. This practice and brief feedings seemed plausible explanations for the infants' persistent crying. The staff advanced many hypotheses to account for the breast preferences, such as the way a woman's blouse unbuttoned and the taboo against using the left hand. Another explanation came from some Javanese health workers during a focus group interview, who said that the left breast contained "food" and the right breast "water," and thus mothers offered the "food" before the "water." A baby who seemed content after being suckled at one breast was never offered the other. South Sumatrans reasoned along similar lines to explain why women there favored the right breast. The more abundant milk in one breast could have given rise to the mothers' belief that it was the more substantial nourishment ("food"). While this did not tell us what originally prompted the favoring of one breast, it did explain why the mothers believed they should feed their infants in this way. In its message, the project approached this topic in terms of the mothers' concern for their infants' satisfaction: "Each time you breastfeed, use both the right and the left breasts: be sure your child is satisfied."

The existing message about oral rehydration also proved inadequate in light of what we learned in the investigation. When the mothers tried to make ORS by following the nationally disseminated recipe, we saw that they did not have the teaspoons the recipe called for to measure the ingredients. The mothers helped us modify the mixing procedure, which subsequently called for a tablespoon, which everyone had, to measure the sugar and a two-finger pinch to measure the salt.

The concept testing highlighted the need for local adaptations of some recommended practices. After numerous trials, a home prepared weaning food made of local ingredients was developed. Although the ingredients were remarkably similar in all the subdistricts, the preparation methods were distinct. The inclusion of a fat source to improve the caloric density of the food was the important element, but one highly suspect to mothers. To make this idea more appealing, regional preferences (discovered during the investigation) had to be preserved. For example, oil was added to the porridge in one area by frying the tahu or tempe before it was mashed in the porridge; in another area, a few drops of coconut oil were added to the cooked rice; and in another, the mixture of ingredients was cooked in coconut milk.

Each of the behavioral objectives for the project reflects what was learned from mothers during the concept testing phase. The key program messages were:

- o Pregnant Women:

Each day eat four plates of food, eat green vegetables four times, and take an iron pill.

- o Nursing Mothers: Same as above, plus drink eight glasses of liquid per day.
- o Mothers of Infants 0-4 Months: Breastfeed only, and use both breasts at each feeding.
- o Mothers of Infants 5-8 Months: Breastfeed, using both breasts. Feed the baby, bubur campur (enriched rice porridge) four times per day. Introduce this supplementary food patiently. (Recipes for bubur campur varied by region).
- o Mothers of Infants 9-24 Months: Give the child adult food four times per day, including tahu, tempe, or fish, and green vegetables. Offer snacks between meals. Continue to breastfeed.
- o Mothers of Children with Diarrhea Give the child LGG, an oral rehydration mixture made with a two-finger pinch of salt, a tablespoon of sugar, and a glass of water or tea. Continue to feed the child soft foods. (This message has special versions for cholera and non-cholera areas).
- o All Mothers of Children Under 5 Years Old Take the child for weighing every month. If the weight does not increase, s/he is not healthy: seek advice and give her/him more food. Ask your kader, midwife, or the health center staff for nutrition advice.

Appendix C*

Selected Results of the Nutrition Communication and Behavior Change Component Evaluation

A two-part evaluation of the project took place a little after a year of full implementation; one part examined kader achievement and the other household realities. NE kaders and households were compared to those in matched subdistricts and villages outside the project areas, which were selected because they had nutrition programs operated by kaders and socioeconomic circumstances similar to those in the project areas. The positive results of both parts of the evaluation indicate that the NE communications strategy could make other Indonesian community nutrition programs more effective. NE kaders scored higher in knowledge of nutrition and in the level of nutrition activity than the kaders they were compared to. The project favorably influenced the families' nutrition-related knowledge, attitudes, and practices, and the changes in practices appear to have resulted in the nutritional status improvements the project had attempted to demonstrate.

The Kaders

Two hundred NE and 105 comparison kaders were interviewed for the evaluation. To evaluate their effectiveness at work and the training that prepared them to do it, they were tested on two areas of achievement: 1) knowledge of nutrition related to the several target age groups and their nutrition problems, and 2) activity and performance.

1. Knowledge. NE kaders were expected to have higher recall scores on the project's messages. The evaluation showed that they did and that, furthermore, when NE kaders were confronted with common nutrition problems -- for example, what to recommend to the mother of a 6-month-old who had not gained weight -- they could impart more precise and accurate advice than comparison kaders.

2. Activity and Performance. NE kaders were more active in their work:

- a) 20% more NE kaders taught nutrition concepts to community groups.

* Source: Manoff International (1984)

- b) They taught and trained 12% more mothers at weighing sessions. They reached 15% more village children through the weighing program, and attendance figures from the month before the evaluation interview showed they had a 10% higher monthly attendance rate.
- c) NE kaders made an average of 5.7 more home visits in the month before the evaluation, and 31% more of them made home visits.
- d) NE kaders spent an average of 6.9 more hours at nutrition work per month. The difference between them and comparison kaders was not in the amount of time they spent at weighing sessions, which was the same (3 hours), but rather in the time given to activities other than weighing (10.8 hours vs. 4.4 hours).

Although the NE and comparison kaders samples were found to vary in three ways -- there were more male kaders in the NE sample, and they were slightly older than comparison kaders and had more program experience -- an analysis for performance determinants showed that these differences in personal characteristics did not account for the higher quality of the NE kaders' work; rather, it was their association with the NE project.

The Households

A total of 1,000 households with either a nursing mother or a child less than 24 months were involved in the evaluation: 600 in the project areas and 400 in the comparison areas. Here, the evaluation looked at the mothers' participation in nutrition activities, their nutrition knowledge scores, the mothers' and childrens' consumption of key foods, their dietary intake of calories and protein, and the infants' nutritional status as measured by weight-for-age, height-for-age, and weight-for-height. NE households' scores for each of these indicators were significantly better than comparison households'.

1. Key Foods. Correlations between knowledge and practice of NE messages were high in the NE sample. This was measured using dietary recalls, which indicated that the NE children received more of the foods identified in the messages (for example, green leafy vegetables, coconut milk, and tahu or tempe) than comparison children. (See Figs. 4 and 5).

2. Nutrient Intake. Mothers who were breastfeeding and children in the NE villages had higher protein and calorie intakes than comparison mothers and children. It appears that implementing the practices recommended in the messages meant improved nutrient intake.

3. Nutritional Status. Children in the NE sample grew significantly better after 5 months of age than children in the comparison sample.

The growth chart in Fig. 10 shows the mean weights for children in each age group. The growth curve for infants in the NE sample flattens at 7 months, the curve for the comparison infants at 5 months. The mean values for NE infants never fall below the normal zone, whereas the mean values of infants in the comparison group drop below the normal zone at the thirteenth month. The differences between the samples are significant ($p \leq .05$) at 2 and 3 months, 7 and 8 months, and 14 months onwards.

The average difference in weight between the NE and the comparison infants 17 through 24 months of age was slightly more than half a standard deviation. In other words, during the second half of the second year of life, about 20% more children in the NE sample were well nourished (i.e., they had normal weight for their age). Furthermore, probably 20% of the children whose growth was within the normal range had better growth status than comparison children whose growth was normal. Thus, 40% of the NE children can be said to have had improved nutritional status at 24 months of age.

The evaluation analyzed each pair of subdistricts in addition to comparing the total NE and comparison samples to ensure that one or two subdistricts were not skewing the results. In each of the five subdistrict analyses, the nutritional status of NE infants was significantly better than the comparison infants'.

4. Program Effect: Generally, the samples were similar on all measured socioeconomic indicators (i.e., occupation, education, mother's age, radio ownership, money spent on food, etc.). The NE sample may have had a marginally greater exposure to urban influences. However, that did not account for the pronounced differences in the two samples for program effectiveness indicators. Program participation determined most of the difference.

The project's effect was particularly pronounced in families where the mother had one to five years of education. Similar to the pattern observed in other studies the comparison mothers with less formal schooling tended to know fewer nutrition facts and to have a higher rate of malnutrition among their children. In the NE sample, the mothers with less formal schooling had a nutrition knowledge score equal to those with more education, and their children had an equivalent nutritional status as well.

Analysis of the project's communications component indicated that it was the quality of the education which had made a difference, particularly with the face-to-face communications in which the kaders were aided by the Action Posters. Both the Action Posters and the use of the weighing sessions as educational forums made possible the precise